Service Schematics

Introduction



RH-29

IMPORTANT:

This document is intended for use by authorized NOKIA service centers only.

“Service Schematics” was created with focus on customer care.
The purpose of this document is to provide further technical repair information for NOKIA Ngage QD phones on Level 3/4 service activities.
It contains additional information such as e.g. “Component finder”, “Frequency band table” or “Antenna switch table”.
The “Signal overview” page gives a good and fast overview about the most important signals and voltages on board.
Saving process time and improving the repair quality is the aim of this document.
It is to be used additionally to the service manual and other training or service information such as Service Bulletins.



All measurements were made using following equipment:

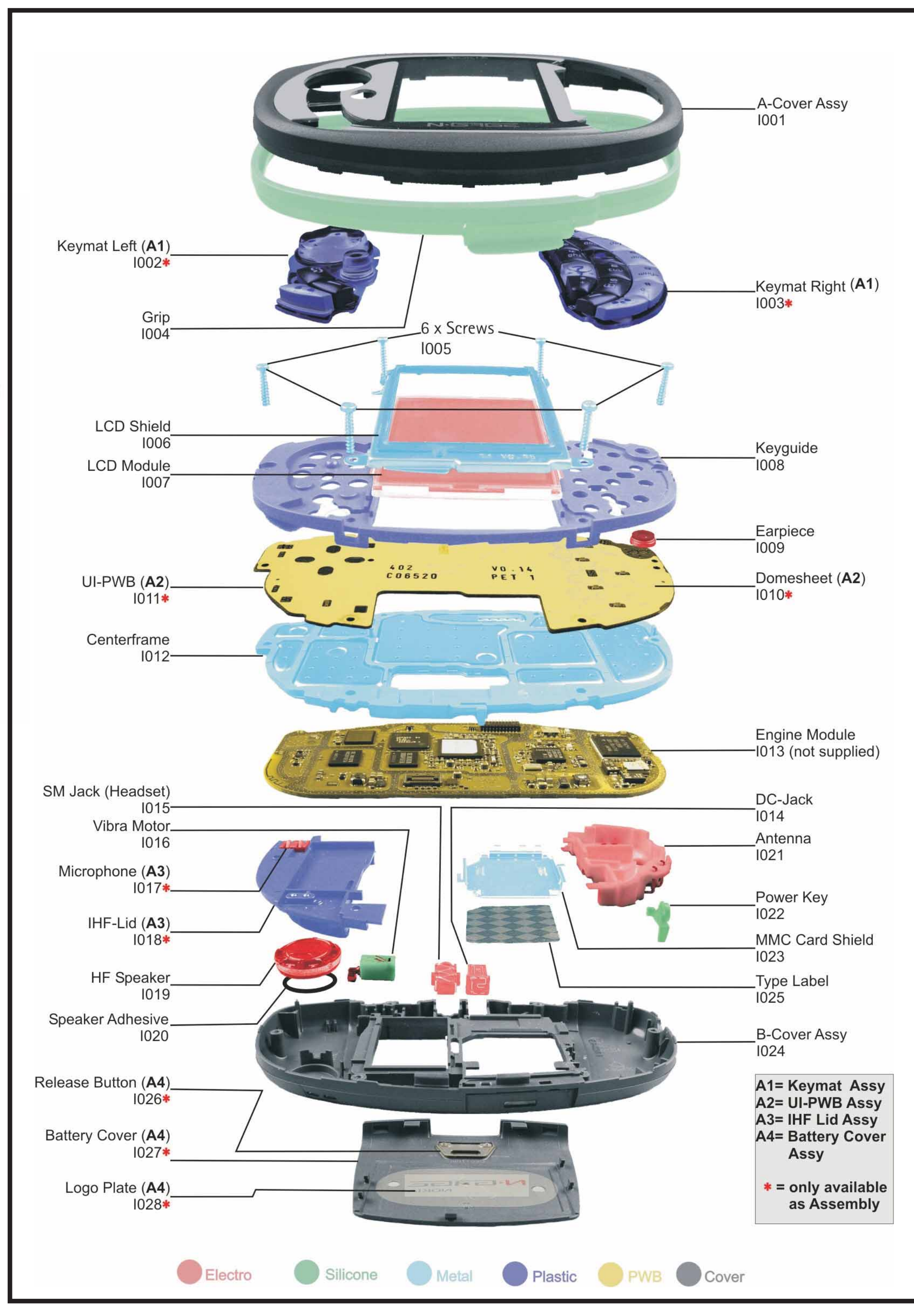
Nokia repair SW	:	Phoenix version A13 2004.08.5.42
Oscilloscope	:	Fluke PM 3380A/B
Spectrum Analyzer	:	Advantest R3131 with an analog probe
RF-Generator / GSM Tester	:	Rhode & Schwarz CMU 200
Multimeter	:	Fluke 73 Series II

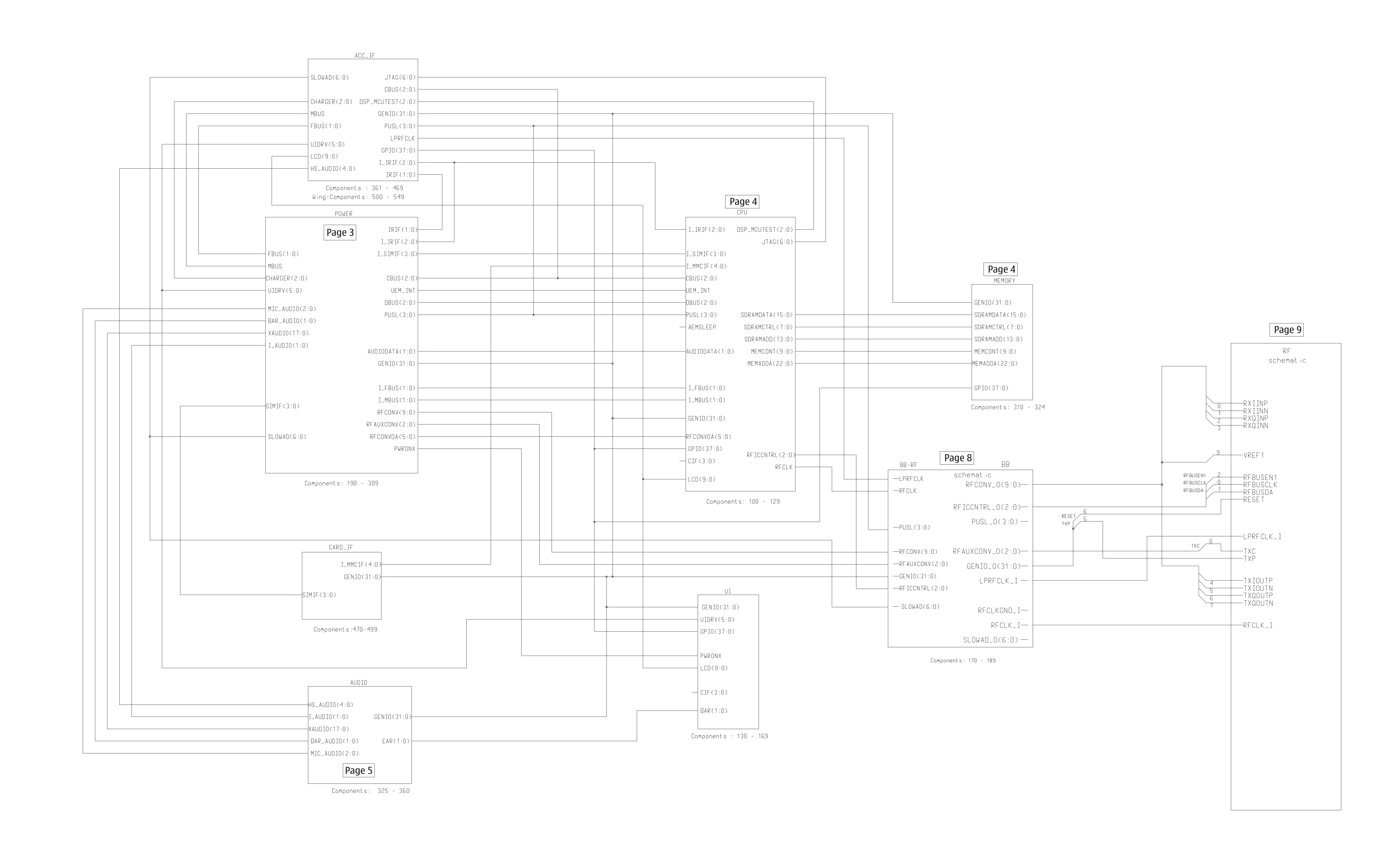
While every endeavour has been made to ensure the accuracy of this document, some errors may exist. If the reader finds any errors, NOKIA should be notified in writing.

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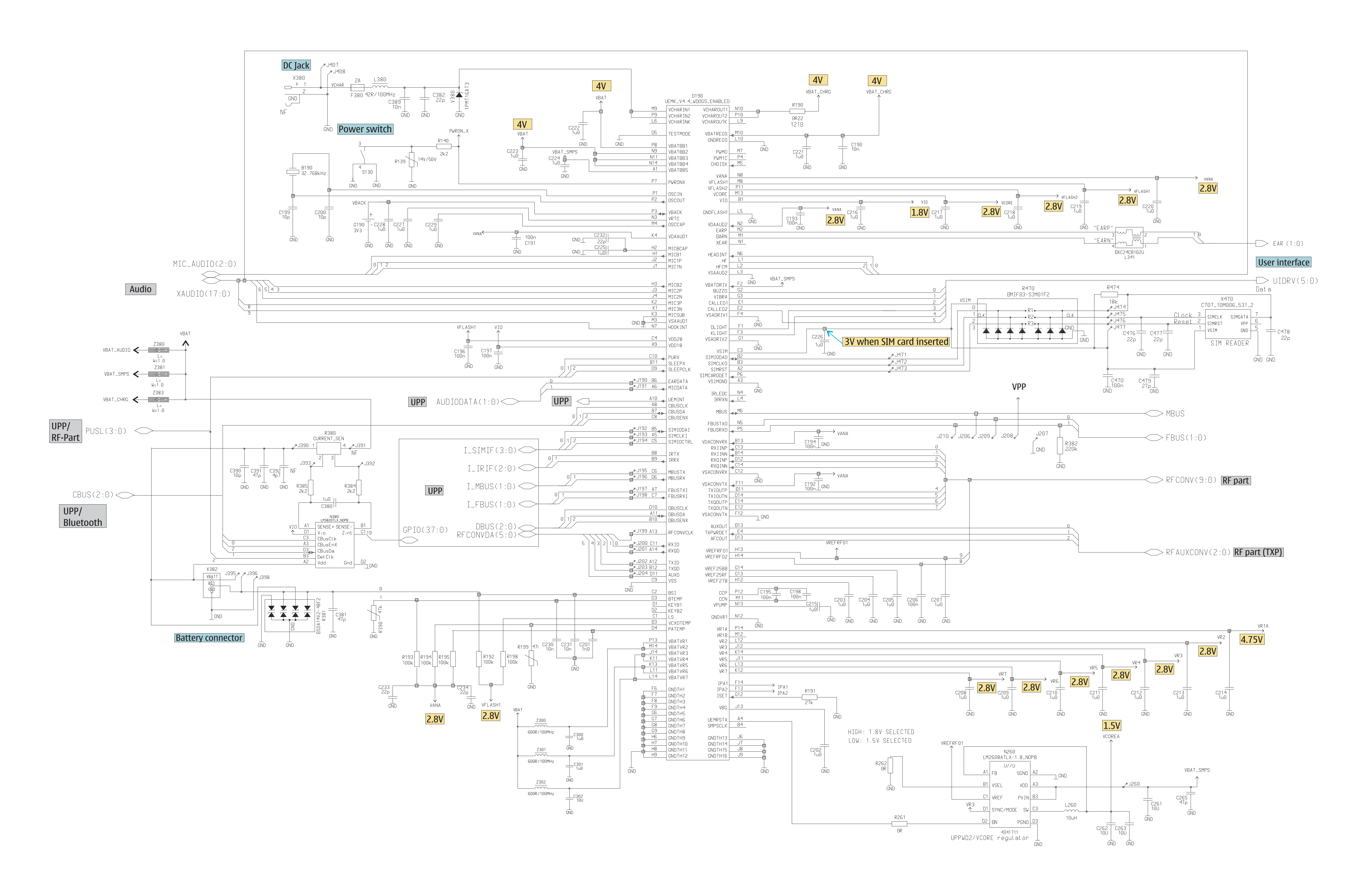
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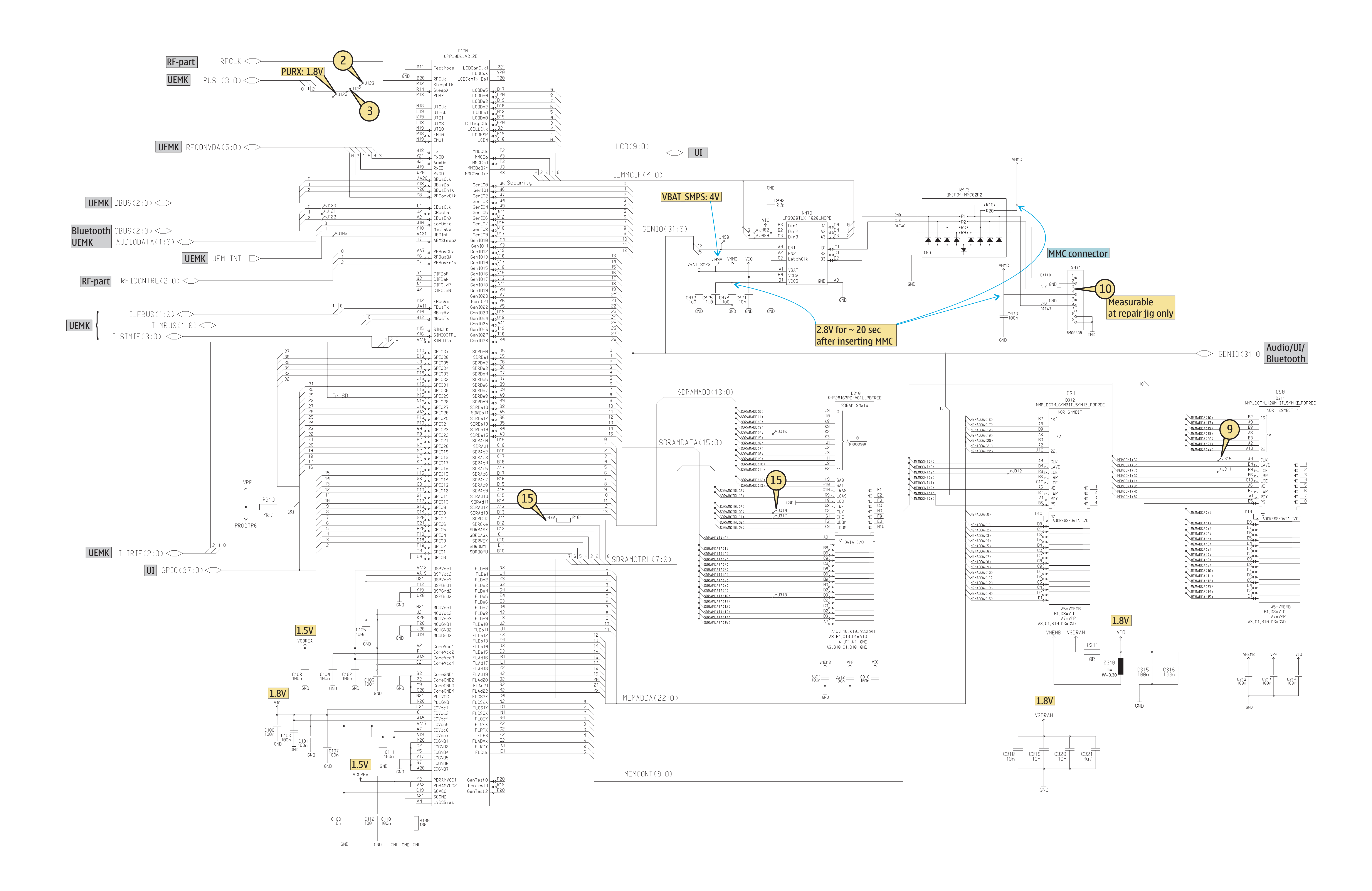
Exploded view and component disposal

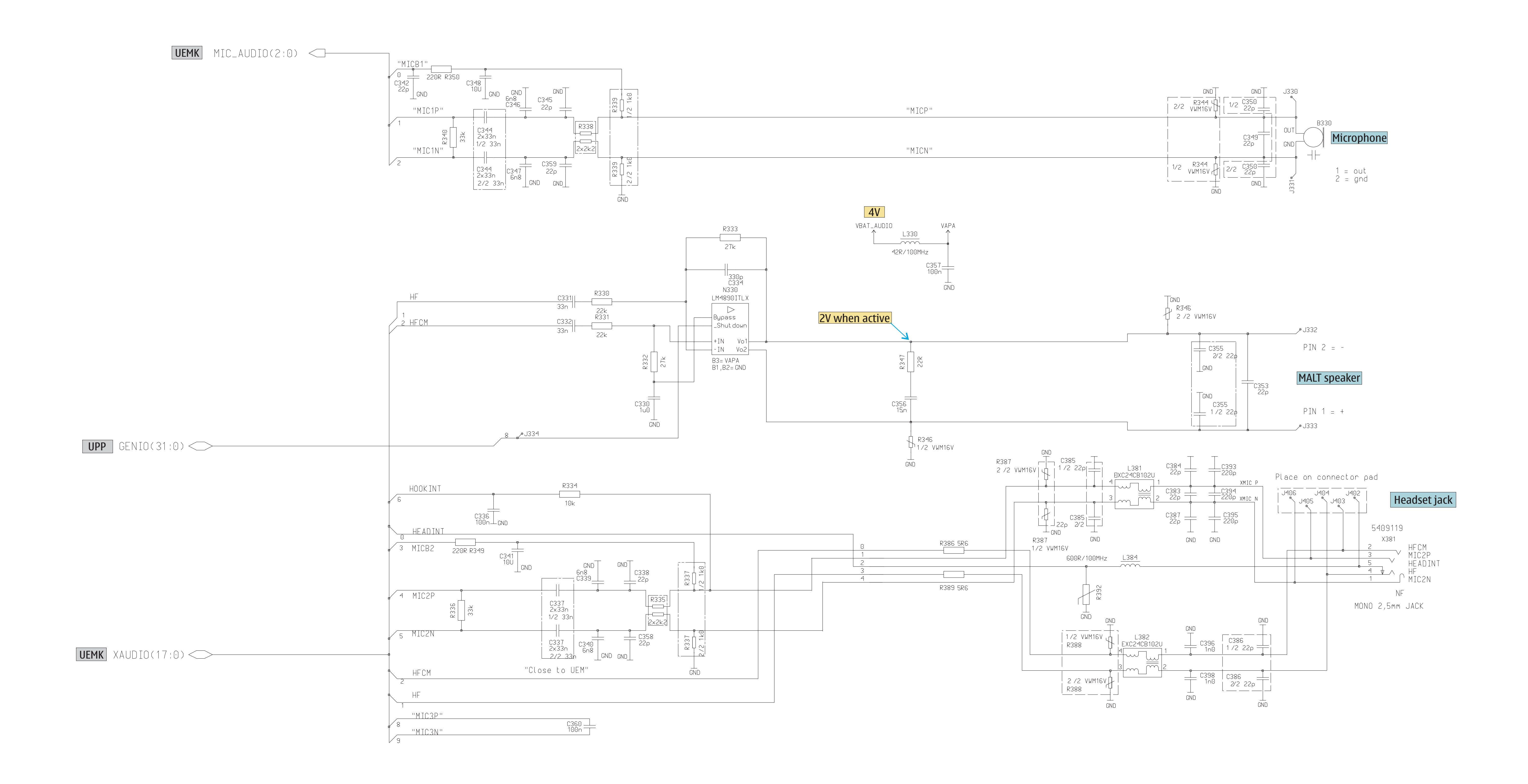


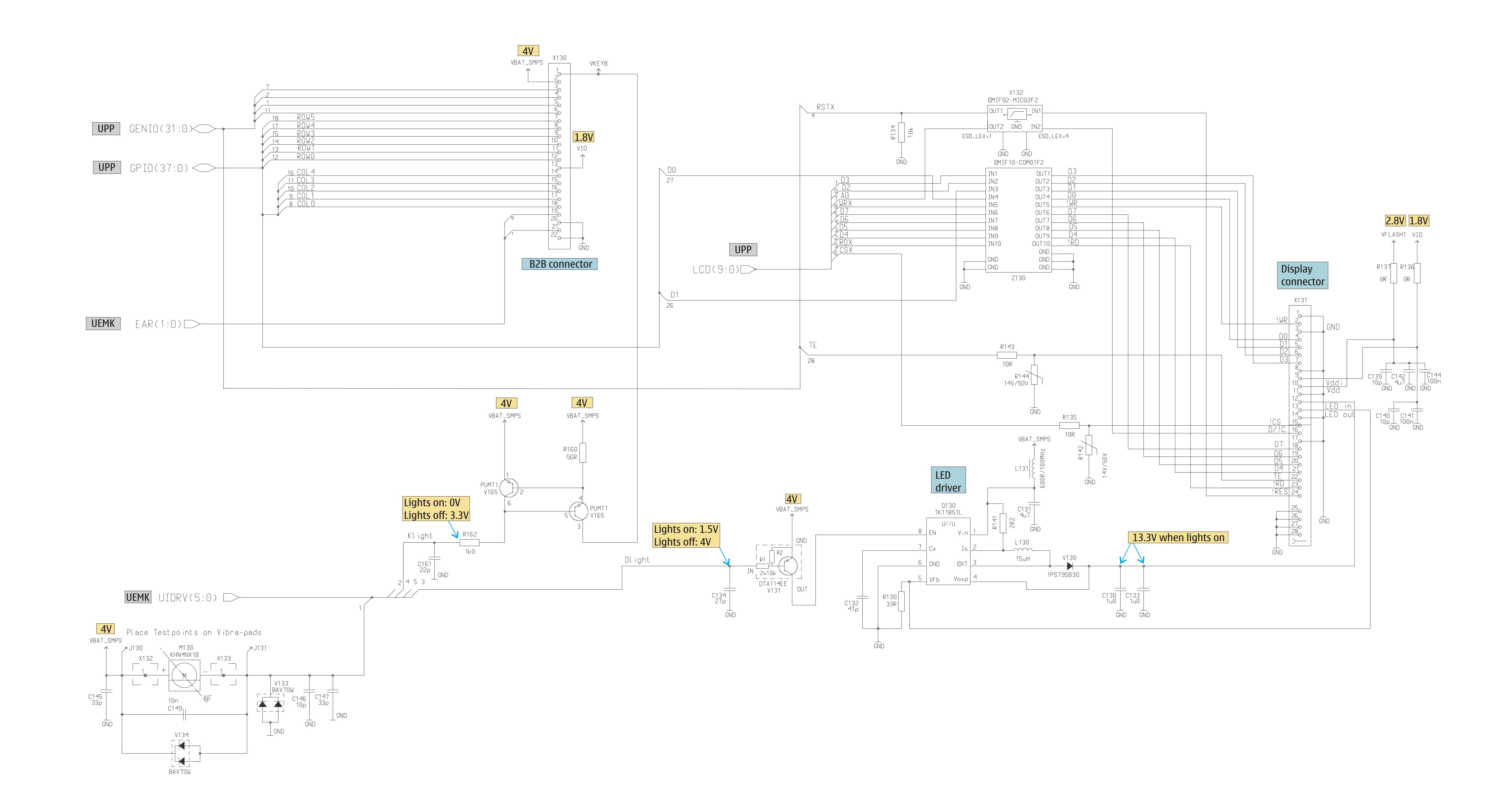


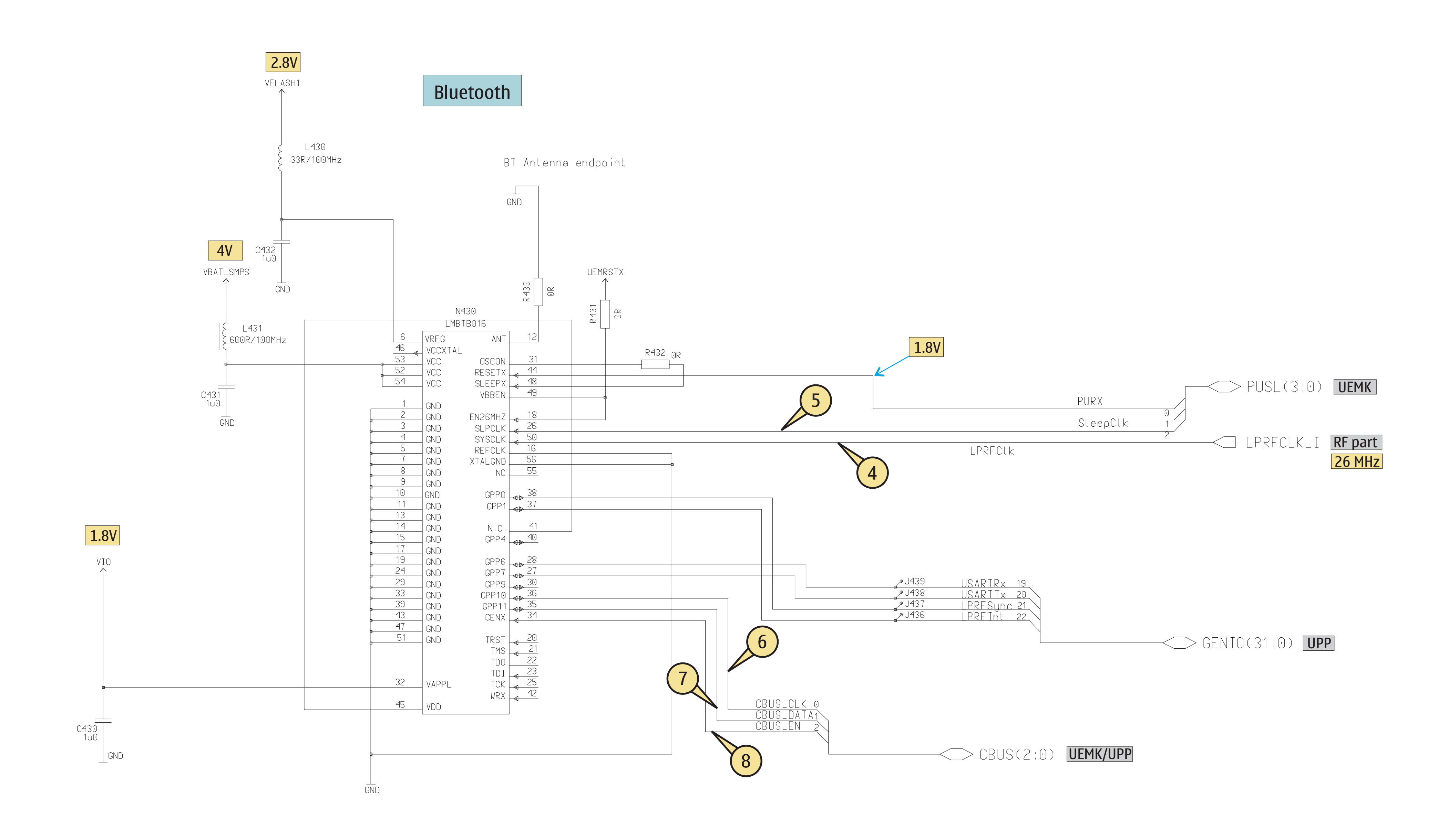
ACC_IF
SLOWAD(6:0)
CHARGER(2:0)
MBUS
FBUS(1:0)
UIDRV(5:0)
LCD(9:0)
HS_AUDIO(4:0)
JTAG(6:0)
CBUS(2:0)
DSP_MCUTEST(2:0)
GENIO(31:0)
PUSL(3:0)
LPRFCLK
GPIO(37:0)
I_IRIF(2:0)
IRIF(1:0)
Components : 361 - 469
Wing-Components: 500 - 549
Page 3
POWER
Components : 190 - 309
Page 4
CPU
Components : 100 - 129
Page 4
MEMORY
Components : 310 - 324
Page 9
RF
schematic
Page 8
BB-RF
BB
schematic
Components : 170 - 189
CARD_IF
Components:470-499
UI
Components : 130 - 169
AUDIO
Page 5
Components: 325 - 360


DC Jack
Power switch
Audio
MIC_AUDIO(2:0)
XAUDIO(17:0)
UPP/
RF-Part
PUSL(3:0)
CBUS(2:0)
UPP/
Bluetooth
Battery connector
UPP
AUDIODATA(1:0)
I_SIMIF(3:0)
I_IRIF(2:0)
I_MBUS(1:0)
I_FBUS(1:0)
GPIO(37:0)
DBUS(2:0)
RFCONVDA(5:0)
D190
UEMK_V4.4_WDOGS_ENABLED
4V
2.8V
1.8V
1.5V
4.75V
3V when SIM card inserted
User interface
EAR (1:0)
UIDRV(5:0)
Data
SIM READER
Clock
Reset
VPP
MBUS
FBUS(1:0)
RFCONV(9:0)
RF part
RFAUXCONV(2:0)
RF part (TXP)
HIGH: 1.8V SELECTED
LOW: 1.5V SELECTED
N260
LM2608ATLX-1.8_NOPB
UPPWD2/VCORE regulator


RF-part
RFCLK
UEMK
PUSL(3:0)
PURX: 1.8V
UEMK
RFCONVDA(5:0)
UEMK
DBUS(2:0)
Bluetooth
UEMK
CBUS(2:0)
AUDIODATA(1:0)
UEMK
UEM_INT
RF-part
RFICCNTRL(2:0)
UEMK
I_FBUS(1:0)
I_MBUS(1:0)
I_SIMIF(3:0)
UEMK
I_IRIF(2:0)
UI
GPIO(37:0)
LCD(9:0)
UI
I_MMCIF(4:0)
VBAT_SMPS: 4V
GENIO(31:0)
MMC connector
Measurable
at repair jig only
2.8V for ~ 20 sec
after inserting MMC
GENIO(31:0)
Audio/UI/
Bluetooth
SDRAMADD(13:0)
SDRAMDATA(15:0)
SDRAMCTRL(7:0)
MEMADDA(22:0)
MEMCONT(9:0)
1.5V
1.8V
1.5V
1.8V
1.8V
D100
UPP_WD2_V3.2E
N470
LP3928TLX-1828_NOPB
R473
EMIF04-MMC02F2
X471
D310
K4M28163PD-VGTL_PBFREE
D312
NMP_DCT4_64MBIT_54MHZ_PBFREE
D311
NMP_DCT4_128M IT_54MHZ_PBFREE

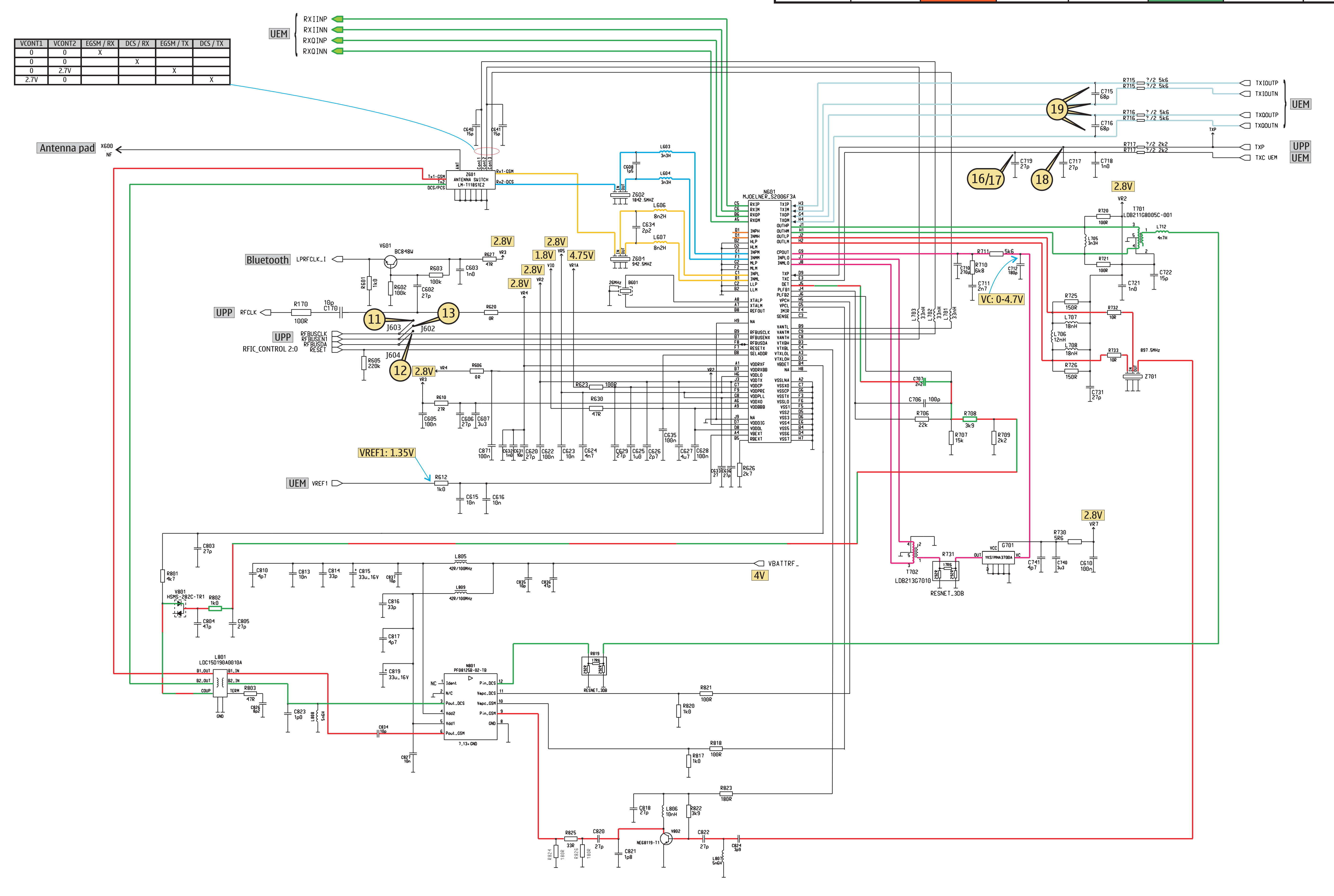

UEMK
MIC_AUDIO(2:0)
"MICP"
"MICN"
Microphone
4V
VBAT_AUDIO
VAPA
2V when active
MALT speaker
PIN 2 = -
PIN 1 = +
UPP
GENIO(31:0)
Headset jack
Place on connector pad
UEMK
XAUDIO(17:0)
"Close to UEM"
MONO 2,5mm JACK


4V
VBAT_SMPS
X130
VKEYB
UPP
GENIO(31:0)
UPP
GPIO(37:0)
ROW5
ROW4
ROW3
ROW2
ROW1
ROW0
COL4
COL3
COL2
COL1
COL0
1.8V
VIO
GND
B2B connector
UEMK
EAR(1:0)
RSTX
V132
EMIF02-MIC02F2
EMIF10-COM01F2
Z130
R134
10k
D0
D1
UPP
LCD(9:0)
TE
R143
10R
R144
14V/50V
R135
10R
R142
2.8V
1.8V
VFLASH1
VIO
R137
0R
R136
0R
Display connector
X131
GND
!WR
Vdd
LED in
LED out
!CS
D/!C
!RD
!RES
C139
10p
C142
4u7
C144
100n
C140
10p
C141
100n
4V
VBAT_SMPS
4V
VBAT_SMPS
R160
56R
PUMT1
V165
Lights on: 0V
Lights off: 3.3V
Klight
R162
1k0
C161
22p
UEMK
UIDRV(5:0)
Dlight
Lights on: 1.5V
Lights off: 4V
4V
VBAT_SMPS
C134
27p
DTA114EE
V131
2x10k
LED driver
D130
TK11851L
EN
Cx
GND
Vfb
Vin
Is
EXT
Vovp
VBAT_SMPS
L131
600R/100MHz
R141
2R2
C131
4u7
L130
15uH
V130
1PS79SB30
13.3V when lights on
C130
1u0
C133
1u0
C132
47p
R130
33R
4V
VBAT_SMPS
Place Testpoints on Vibra-pads
J130
X132
M130
KHN4NX1B
X133
J131
C145
33p
10n
C149
V133
BAV70W
C146
10p
C147
33p
V134
BAV70W

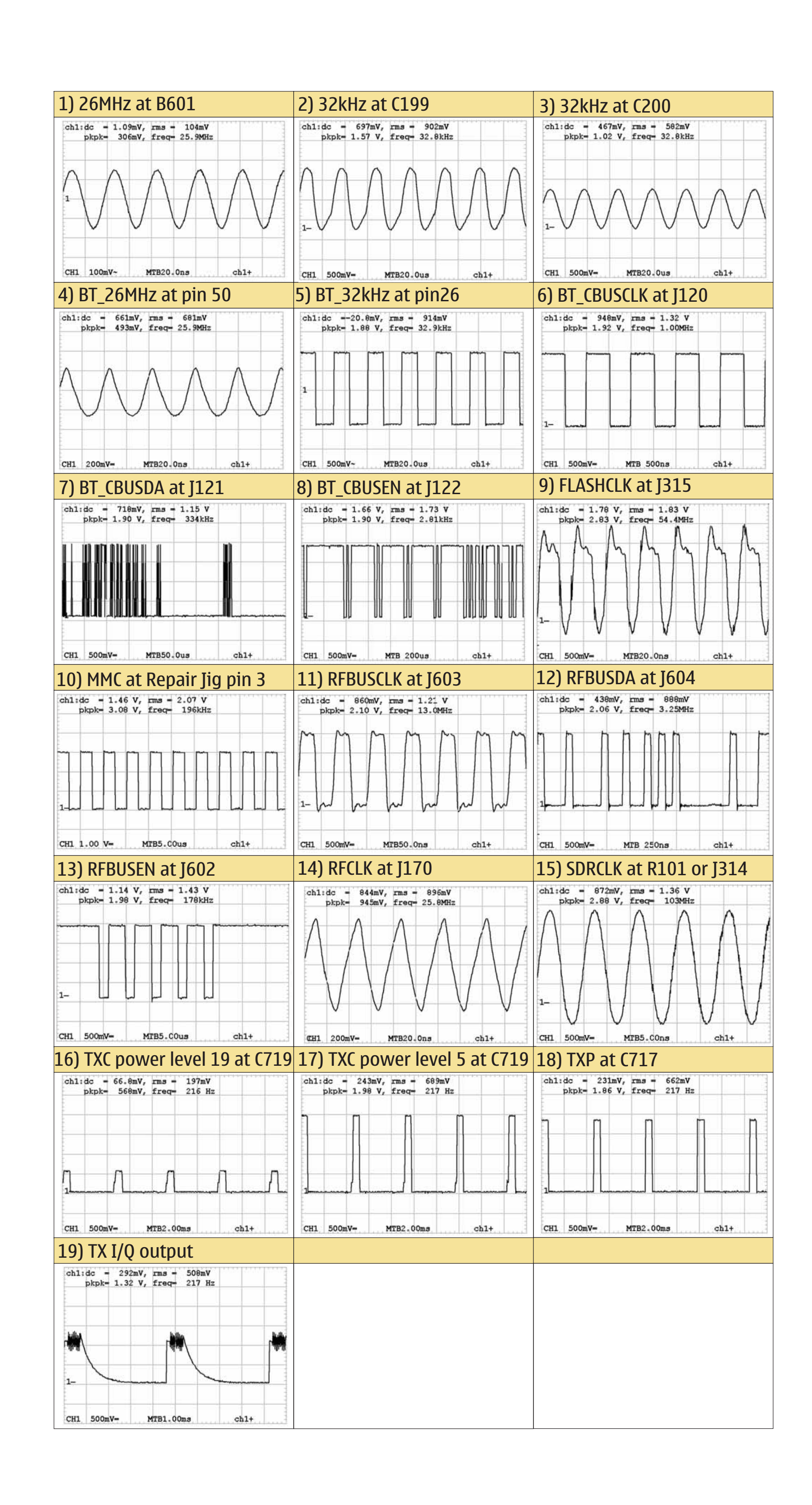


2.8V
VFLASH1
Bluetooth
L430
33R/100MHz
BT Antenna endpoint
4V
VBAT_SMPS
C432
1u0
L431
600R/100MHz
C431
1u0
UEMRSTX
R430
R431
N430
LMBTB016
1.8V
R432
PURX
PUSL(3:0)
UEMK
SleepClk
LPRFCLK_I
RF part
26 MHz
LPRFClk
VIO
USARTRx
USARTTx
LPRFSync
LPRFInt
GENIO(31:0)
UPP
CBUS_CLK
CBUS_DATA
CBUS_EN
CBUS(2:0)
UEMK/UPP
C430
1u0
GND

Band	Channel	RX	VCO/RX	VC/RX	TX	VCO/TX	VC/TX
GSM 900	37	942,4MHz	3769,6MHz	~2.6V	897,4MHz	3589,6MHz	~1.8V
GSM 1800	700	1842,8MHz	3685,6MHz	~2.2V	1747,8MHz	3495,6MHz	~1.4V



VCONT1	VCONT2	EGSM / RX	DCS / RX	EGSM / TX	DCS / TX
0	0	X			
0	0		X		
0	2.7V			X	
2.7V	0				X



VR7: 2.8V
VR6: 2.8V
VSDRAM: 1.8V
SDRAM
UPP
VR4: 2.8V
VC: 0-4.7V
VR7: 2.8V
VBAT: 4V
VR1A: 4.75V
VR2: 2.8V
VR2: 2.8V
UEMK
VR3: 2.8V
VR5: 2.8V
VANA: 2.8V
VR1A: 4.75V
VIO: 1.8V
VBAT: 4V
VFLASH1: 2.8V
VR5: 2.8V
VIO: 1.8V
PA
128Mbit FLASH
64Mbit FLASH
Mjoelner
VR3: 2.8V
VCONT1
VCONT2
VREF1: 1.35V
VR4: 2.8V
VR3: 2.8V
VBAT_SMPS: 4V
13.3V lights off

VBAT: 4V
PURX: 1.8V
Bluetooth
MMC reader
SIM card reader
VBATT
BSI
GND

B		C224	J5	C395	K9	C816	T5	R135	I3	R710	P8
B190	M5	C225	K4	C396	I10	C817	U5	R139	U7	R711	P8
B601	O4	C226	J5	C398	J10	C818	T9	R140	U6	R712	R7
C		C227	M4	C430	D7	C819	T2	R141	Q1	R715	O7
C100	H6	C228	M5	C431	E3	C820	T8	R142	I3	R716	O7
C101	J8	C229	M5	C432	D3	C821	T8	R143	I3	R717	N5
C102	H9	C230	J4	C470	K1	C822	S9	R144	I3	R720	Q6
C103	I6	C231	J4	C471	N7	C823	S5	R160	L10	R721	R6
C104	I6	C232	K5	C472	N7	C824	S8	R162	L10	R725	P6
C105	I9	C233	J4	C473	M7	C826	T4	R170	G9	R726	Q6
C106	H9	C261	G2	C474	M8	C827	T5	R190	M7	R727	Q7
C107	H9	C262	G3	C475	M7	C834	U5	R191	K8	R730	R8
C108	G6	C263	G3	C476	K2	C835	S2	R192	J4	R731	Q9
C109	H9	C265	G2	C477	K1	C836	S2	R193	J4	R732	P6
C110	I6	C300	L8	C478	K2	C837	T2	R194	J4	R733	P6
C111	G9	C301	L8	C479	K1	C871	P4	R195	J4	R801	U4
C112	G6	C302	K8	C492	N8	D		R198	J5	R802	V5
C130	O2	C310	I4	C602	H9	D100	H7	R199	L3	R803	T4
C131	O2	C311	I5	C603	H10	D130	P2	R261	G2	R805	S9
C132	O2	C312	I5	C605	P4	D190	K6	R262	G3	R817	T8
C133	O2	C313	D5	C606	P4	D310	E8	R310	J5	R818	T8
C134	N2	C314	D5	C607	P4	D311	E5	R330	C6	R819	S8
C139	J1	C315	D7	C608	Q5	D312	H5	R331	C6	R820	T8
C140	I1	C316	D8	C610	R9	F		R332	B6	R821	T8
C141	I1	C317	D7	C615	P4	F380	M10	R333	C5	R822	T9
C142	K3	C318	D8	C616	P4	G		R334	M3	R823	T9
C144	J1	C319	D8	C620	Q4	G190	Q9	R335	L4	R824	U8
C145	G8	C320	D8	C622	P6	G701	Q9	R336	L5	R825	U8
C146	G8	C321	D8	C623	O5	L		R337	L4	R826	U8
C147	G8	C330	B6	C624	O5	L130	Q2	R338	K4	S	
C149	G8	C331	C6	C625	O6	L131	O2	R339	K4	S130	V7
C161	L10	C332	C6	C626	P7	L260	F2	R340	K5	T	
C170	G9	C334	C5	C627	P7	L330	C4	R344	B6	T701	Q7
C190	M6	C336	M4	C628	O5	L341	L5	R346	E1	T702	R9
C191	M4	C337	L5	C629	O5	L380	M10	R347	C5	V	
C192	J8	C338	L4	C631	Q4	L381	L8	R349	L4	V130	P2
C193	L5	C339	L4	C632	Q4	L382	I9	R350	K5	V131	N2
C194	J8	C340	L4	C633	O6	L384	I8	R381	R3	V132	J3
C195	M7	C341	L4	C634	Q4	L430	D3	R382	M4	V133	H9
C196	J5	C342	K5	C635	O5	L431	E3	R384	Q2	V134	H9
C197	J6	C344	K5	C636	P6	L603	Q5	R385	R2	V165	L9
C198	M7	C345	K4	C640	T3	L604	Q5	R386	I9	V380	M9
C199	M5	C346	K4	C642	S3	L606	Q4	R387	K8	V601	H9
C200	M5	C347	K4	C650	U3	L607	Q4	R388	I9	V801	U5
C201	J5	C348	K4	C706	O6	L701	N5	R389	J9	V802	T8
C202	K8	C349	B7	C707	O6	L702	N5	R390	Q2	X	
C203	J8	C350	B7	C710	P8	L705	Q6	R392	I8	X130	N9
C204	J8	C353	D1	C711	P9	L706	P6	R430	C3	X131	I2
C205	K8	C355	E1	C712	P8	L707	P6	R431	E3	X132	F9
C206	K8	C356	B5	C715	O7	L708	Q6	R432	D8	X133	F9
C207	K8	C357	B5	C716	O7	L712	Q7	R470	K1	X260	E2
C208	L8	C358	L4	C717	O5	L801	U4	R473	M7	X382	Q3
C209	M8	C359	K4	C718	N5	L806	T8	R474	K2	X470	I4
C210	M5	C360	L4	C719	O5	L808	S5	R601	H9	X471	N5
C211	M8	C380	Q2	C721	Q7	L809	S2	R602	H9	Z	
C212	M6	C381	R3	C722	Q7	N		R603	H9	Z130	K2
C213	M6	C382	N9	C731	P7	N260	G2	R605	N6	Z300	L8
C214	M7	C383	L8	C740	R8	N330	B5	R606	P3	Z301	L8
C215	M7	C384	K9	C741	Q8	N380	Q1	R610	P4	Z302	K8
C216	J5	C385	K8	C742	Q8	N430	D5	R612	P4	Z601	T3
C217	M8	C386	I10	C803	U4	N470	N7	R623	O6	Z602	R5
C218	M8	C387	L9	C804	V5	N601	P5	R626	P3	Z604	R4
C219	M5	C389	N9	C805	U5	N801	T6	R627	H10	Z701	P7
C220	M6	C390	R2	C810	S5	R		R630	O5		
C221	M6	C391	R2	C813	T5	R100	I5	R706	O6		
C222	M6	C393	K9	C814	T5	R101	G8	R707	O6		
C223	L8	C394	K9	C815	S4	R130	O2	R708	O6		

